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HUG, ERIC J	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/262,912
Filing Date: March 05, 1999
Appellant(s): VUORINEN ET AL.

Nixon & Vanderhye P.C.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 8, 2006 appealing from the Office action mailed January 3, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. The amendment filed May 5, 2006 has been entered as presenting the claims in better form for appeal.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Henricson	WO 97/15713	01 May 1997
Chang et al.	WO 91/05909	02 May 1991

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 21, 22, 25, 27-29, 32-35, and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henricson (WO 97/15713) in view of Chang et al (WO 91/05909).

Henricson teaches a method of bleaching cellulose pulps using a chlorine-free bleaching sequence, wherein the pulp is subject to an acid treatment within one of the bleaching stages. In particular, the acid treatment can be effected in a chlorine dioxide stage with the object of reducing the consumption of chlorine dioxide in the bleaching step. The method is further characterized in that cellulose pulp is acid treated at a temperature of about 75-130 degrees C and at a pH of about 2-5 to remove at least about 30% of the hexenuronic acid groups in the cellulose pulp and to decrease the kappa number of the pulp by 2-9 units. A retention time of 30-300 minutes is required. See page 3, line 26 to page 4, line 4. The removal of hexenuronic acids results in significant savings in the consumption of bleaching chemicals, such as chlorine dioxide. See page 7, lines 1-13 of Henricson for possible bleaching sequences following alkaline digestion and oxygen delignification (O). Several of these sequences include a first stage AD

which consists of an acid (A) step followed by a chlorine dioxide (D) step. The AD may alternatively be performed in the order DA, as described in lines 11-13. The optimization of treatment conditions such as pH or temperature may be facilitated by using a two or more successive acid towers instead of a single tower. This also makes it possible to act on the treatment conditions by adding chemicals advantageous for the treatment, such as chelating agents (Q) to remove metals from the pulp and further reduce the consumption of bleaching chemicals. Bleaching and acid adjusting steps in inlet lines and/or towers and/or outlet lines is further taught by Henricson. Thus, Henricson teaches that it is advantageous to utilize a first bleaching stage consisting of AD or DA for reduced consumption of chlorine dioxide. Henricson does not disclose an acid addition between first and second chlorine dioxide steps (from hereon to be referred to as DAD).

Chang teaches a two-step, high/low pH chlorine dioxide bleaching stage of an alkaline pulp bleaching sequence which is utilized in place of a single-step chlorine dioxide bleaching stage. The process consists of bleaching pulp in a first chlorine dioxide bleaching step for a time of 5 minutes at a temperature of 85^0C at a pH maintained between 6.0 and 7.5, then continued bleaching in a second bleaching step at reduced pH of 1.9 to 4.2 for 120 minutes or more. The second bleaching step is performed in the presence of acid which has been added after the first bleaching step to lower the pH to the desired level. See page 8, line 23 to page 9, line 15. Typical dosages of chlorine dioxide are given in the Examples, some of which read on the claimed range. The primary benefit of the two-step high/low pH bleaching process is a substantial reduction of chlorine dioxide usage overall compared to the one-step process.

In summary, Henricson and Chang are analogous in that they both teach combining acid and chlorine dioxide in a bleaching stage to reduce the consumption of chlorine dioxide. Henricson discloses adding acid before chlorine dioxide (AD) or after chlorine dioxide (DA) and provides A-step processing conditions. Chang discloses adding acid after chlorine dioxide (DA) and provides processing conditions for both steps. Both AD and DA combinations reduce the overall consumption of chlorine dioxide. One skilled in the art would be motivated to combine AD and DA to take advantage of reduced chemical usage obtained by both. The claimed DAD treatment encompasses the combined benefits of DA and AD utilizing a single acid treatment.

Any differences between the claimed processing conditions of combined acid and chlorine dioxide bleaching with those of Henricson and Chang are deemed to be minor and would have been obvious to one skilled in the art to optimize to obtain the desired level of bleaching with minimal chemical usage.

(10) Response to Argument

Appellant states that Henricson, while emphasizing advantages to acid treatment followed by chlorine dioxide treatment (AD), is silent to particular technical effects achieved by a DA treatment and to any suitable processing conditions for D portion of this treatment. The processing conditions given by Henricson on page 3, line 26 to page 4, line 4, correspond to the acid treatment (A) step. These process conditions are deemed to be applicable to the A-step whether it is before or after the D-step. Suitable processing conditions for a D-step prior to an A-step can be ascertained from Chang, as given above. The combination of A-step conditions disclosed by Henricson and D-step conditions disclosed by Chang meet the claimed process conditions. Any differences in the A-step processing conditions between DA, AD, or the claimed DAD are deemed to be minor. It would be well within the skill of one skilled in the art to optimize such conditions to reduce chlorine dioxide usage while obtaining the desired bleaching effect.

Appellant otherwise primarily argues that one skilled in the art would not consider combining Henricson and Chang. As described in the rejection above, there are considerable benefits in chemical savings obtained by AD or DA bleaching combinations as disclosed by the references. It is felt that one skilled in the art would be further motivated to obtain even greater chemical savings by combining the teachings of the references. There is nothing in the applied references that would teach away from this.

Regarding the split addition of chlorine dioxide given by Chang on page 29, it is recognized that this is merely a way of reducing the pH in the second of the two bleaching steps.

In view of Appellant's arguments, this disclosure is no longer relied upon as additional motivation to combine Henricson and Chang.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Eric Hug

Conferees:

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